Superfund Program
Early Action Proposed Plan
Wilcox Oil Company Site Region 6
Bristow, Oklahoma Date, Year

EPA ANNOUNCES EARLY ACTION PROPOSED PLAN

This Early Action Proposed Plan identifies the Preferred Alternative for cleaning up the waste material and lead sweetening area at the Wilcox Oil Company Superfund Site (site), Bristow, Oklahoma. This Plan provides the rationale for this preference, and includes summaries of other cleanup alternatives evaluated for use at these areas of the ~~this~~ site. This document is issued by the U.S. Environmental Protection Agency (EPA), the lead agency for site activities, and the Oklahoma Department of Environmental Quality (ODEQ), the support agency. The EPA, in consultation with the ODEQ, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. The EPA, in consultation with the ODEQ, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Early Action Proposed Plan.

Commented [BG1]: GB: I'm guessing there are other areas of the site that will be addressed in other decision documents.
You may want to let folks know that proposed actions for the remainder of the site will happen later.

The EPA is issuing this Early Action Proposed Plan as part of its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Section 117(a) of the Comprehensive, Environmental, Response, Compensation, and Liability Act (CERCLA) § 9617(a). This Early Action Proposed Plan summarizes information that can be found in greater detail in the documents contained in the Administrative Record file for this site. The EPA and the State encourage the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities that have been conducted at the site.

SITE HISTORY AND BACKGROUND

The site ~~Wilcox Oil Company Superfund Site~~ is an abandoned and demolished oil refinery and associated tank farm located north of Bristow, Creek County, Oklahoma (**Figure 1; EPA 2013**). The approximate geographic coordinates for the site are 35°50'31" North latitude and 96°23'02" West longitude. The site spans approximately 140 to 150 acres located in the N ½ of the NW ¼ of S29 T16N R9E and the SW ¼ of the SW ¼ of S20 T16N R9E in Creek County, Oklahoma (**ODEQ 1994**).

Records indicate the property was used for oil refinery operations from 1915 until November 1963 (**ODEQ 1994**), and consisted of two refinery process areas and two tank farm storage areas. Oil refining began in 1915 at the Lorraine Refinery followed by operations at the Wilcox Oil Refinery. A modern skimming and cracking plant with an operating capacity of 4,000 barrels of crude oil per day was constructed for the Wilcox Oil Refinery in 1929. The main components of the plant consisted of a skimming plant, cracking unit, and re-distillation battery with a vapor recovery system and treatment equipment (**ODEQ 1994**). The Wilcox Oil Company expanded when it acquired the Lorraine Refinery in 1937.

Sanborn Fire Insurance Maps (**EPA 2016**) show the properties contained approximately 80 storage tanks of various sizes, a cooling pond, and approximately 10 buildings housing refinery operations. The maps also indicate that crude oil, fuel oil, gas oil, distillate, kerosene, naphtha, and benzene (petroleum ether) were all stored on the property (**ODEQ 1994**).

Wilcox sold the property to private individuals in 1963. Most of the equipment and storage tanks were auctioned or salvaged for scrap metal. Wilcox Oil Company no longer operates in Oklahoma, and based

on information from the Oklahoma Secretary of States' office, the company merged with Tenneco Oil Company in 1967 (**ODEQ 1994**).

The EPA and the ODEQ have conducted multiple investigations at the site since 1994. The associated historical documents are listed below.

- Preliminary Assessment of the Wilcox Oil Company (**ODEQ, 1994**)
- Expanded Site Inspection (ESI) Report – Wilcox Oil Company (**Roy F. Weston, 1997**)
- Site Assessment Report for Wilcox Refinery (**Ecology and Environment, Inc., 1999**)
- Preliminary Assessment of the Lorraine Refinery Site (**ODEQ, 2008**)
- Site Inspection Report – Lorraine Refinery (**ODEQ, 2009**)
- ESI Report – Lorraine Refinery (**ODEQ, 2010**)
- ESI Report – Wilcox Refinery (**ODEQ, 2011a**)
- Supplemental Sampling Report for Wilcox ESI (**ODEQ, 2011b**)

On May 24, 2013, EPA proposed the site to the National Priorities List (NPL). On December 12, 2013, the site officially became a Federal Superfund Site (EPA Identification No. OK0001010917), when it was added to the NPL.

Following site listing on the NPL, the EPA, in conjunction with ODEQ, performed additional site investigations.

- Removal Assessment Report for Wilcox Oil Company (**Weston Solutions Inc., 2016**). During May/June/July 2015, EPA performed residential soil sampling and fenced potential exposure areas to restrict access.
- Trip Report: November 30 through December 16, 2015, Wilcox Oil Company Superfund Site (**LMS, 2016**). In September and December 2015, EPA conducted a geophysical survey, a Rapid Optical Scanning Tool (ROST) laser-induced fluorescence (LIF) survey, and a field-portable X-ray fluorescence (XRF) survey across portions of Wilcox and Lorraine Process Areas and the East Tank Farm.
- Phase 2 – Mobilizations 1, 2, and 3 August-November 2016: Passive Soil Gas Sampling, Vapor Intrusion Sampling, Residential Well Sampling, Soil Sampling, Naturally Occurring Radioactive Material Survey, and Sand Creek Surface Water Sampling.

The EPA completed two searches for potentially responsible parties, and identified five. Information request letters and special notice letters were issued requesting specific site information and notifying the parties of potential liability for site response activity. EPA offered the 5 parties the option to negotiate performing the work. All parties declined. Based on these responses and site research, the Agency determined that further negotiations would not move the project forward in a timely manner; therefore, the site remedial investigation/feasibility study (RI/FS) is being completed as an EPA fund-lead project.

Throughout the investigation process, the community, particularly the residents living within the site boundaries, continue to be updated on site activity through fact sheets, door-to-door meetings, and open houses.

SITE CHARACTERISTICS

This section summarizes the current information available about site characteristics. EPA is currently working on the site-wide Remedial Investigation (RI), to fully characterize ~~so~~ the nature and extent of contamination, potential transport pathways, and potential human health and environmental risks ~~have not been fully characterized~~. This information will be provided in the final RI and Risk Assessment reports for the site when available.

After the refinery operations ceased and most of the tanks and buildings were demolished and sold for scrap, the property was sold to private interests (ODEQ 1994). Beginning in 1975 with the construction of the church, private residences were constructed on six parcels of land that were part of the former refinery operations, with the most recent being constructed in 2003/2004. One former building associated with the refinery was repurposed as a residence. As a result, there are seven residences on the site located within former tank or refinery operation areas, three of which are occupied and one periodically rented. Three properties located on the eastern portion of the site (East Tank Farm) are known to use water from domestic/private wells (ODEQ 1994).

The site is flanked by Route 66 to the west; a residential area and Turner Turnpike to the northwest and north; Sand Creek to the west and southwest; and residential, agricultural, and wooded areas to the east and south (Figure 2). The topography in the vicinity of the site slopes to the south. The drainage pattern of the property is primarily towards Sand Creek. An intermittent stream (West Tributary), a perennial stream (East Tributary), and several drainage channels transect the property east of the railroad (Wilcox Process Area and East Tank Farm), all of which flow into Sand Creek (EPA 2016).

The facility can be divided into five (5) major former operational areas (Figure 2): the Wilcox and Lorraine Process Areas, the East and North Tank Farms, and the Loading Dock Area (EPA 2016). An active railroad divides the two former process areas and product storage areas. Historical waste management practices are not known at this site. Historical Sanborn maps are available for some areas of the site and were reviewed to identify the possible locations where contamination may have originated (Figure 3). Waste associated with crude oil refining may include the following: petroleum-related compounds, tank residues, crude oil, fuel oil, gas oil, petroleum distillate, kerosene, benzene, petroleum ether, brine, acid and caustic sludge, heavy metals, coke, sulfur compounds, solvents, and naturally-occurring radioactive material. Hexavalent chromium may be present where activities associated with cooling towers and cooling ponds took place (EPA 2016).

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Waste Material Areas

Data collected during historic and current site investigations, show that refinery operations resulted in the presence of a contaminated oily tar-like viscous solid (**Figures 4a - c**) found throughout the property at various locations, primarily associated with former tank storage locations (**Figure 5**). This oily tar-like viscous solid is present at or just below a thin layer of soil, and oozes to the surface and spreads out when heated by the summer sun. Throughout this document, the oily tar-like viscous solid will be referred to as waste material.

The Hazard Ranking System (HRS) document identified 10 source areas including a former cooling pond and 9 former tank area, sludges and the associated releases of polynuclear aromatic hydrocarbons (PAHs) and metals to the nearby wetlands and Sand Creek. The RI ~~investigation~~ verified the presence of waste material at 7 of the 9 former tank areas. In addition to those identified in the HRS document, one tank area and one separation pit have been identified during the RI. These 7 former tank areas and one separation pit are being proposed for early action due to proximity to the creek, proximity to residential homes, and the presence of high contaminant concentrations.

Results for samples collected from the waste material during site investigations are as high as 3,660 milligrams per kilogram (mg/kg) lead, 20,000 micrograms per kilogram (µg/kg) polycyclic aromatic hydrocarbons, 1.4 x 10^6 ug/kg 2-methylnaphthalene, and 875,000 mg/kg total petroleum hydrocarbons (**Table 1**).

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During Phase 2 - Mobilization 1, Field Event 2, passive soil gas and indoor air data were collected. The passive soil gas data show a potential for the generation of contaminated soil gas (Beacon 2016), while the indoor air data show some gasses are present above screening numbers (**Table 2**).

The HRS document cited that a release to surface water and sediment is of major concern because of the proximity to surface water bodies and the lack of containment structures around potential waste sources. Wetland frontages occur onsite, in the downstream segments of Sand Creek and further downgradient in Little Deep Fork Creek. There is no documentation or evidence to indicate that the tank areas had or maintained a run-on control system or runoff management system (including treatment of diked liquids), liner, or an engineered cover (**ODEQ, Sept 2011**). These conditions remain a concern as the presence of source material has been verified during site investigation activities along Sand Creek (**Figure 5**). In addition, the presence of source material has been verified on two residential properties within the immediate vicinity of the home: one being in the front yard and one being in the back yard.

Based on court decisions discussed below, the "crude oil tank bottoms" are considered CERCLA wastes and do not fall within CERCLA's exclusion of 'petroleum'. In its decision in U.S. v. Western Processing (1991), the federal district court concluded that "tank bottom sludge is a contaminated waste product, and not a petroleum fraction, as that term is used in [CERCLA]." In so ruling, the court focused in part on the tank bottom's status as "waste" in contrast to a useful petroleum product, which would be considered a petroleum fraction under CERCLA. In Cose v. Getty Oil (1993), the U.S. 9th Circuit of Appeals concluded "crude oil tank bottoms are never 'subjected to various refining processes'; as required by our 'petroleum' definition. Moreover, such tank bottoms are not used 'for producing useful products'…" and "crude oil tank bottoms do not fall within CERCLA's exclusion of 'petroleum', including crude oil or a fraction thereof". ~~Data collected during historic and current site investigations, show that refinery operations resulted in the presence of a contaminated oily tar-like viscous solid (**Figures 4a - e**) found throughout the property at various locations, primarily associated with former tank storage locations (**Figure 5**). This oily tar-like viscous solid is present at or just below a thin layer of soil, and oozes to the surface and spreads out when heated by the summer sun. Throughout this document, the oily tar-like viscous solid will be referred to as waste material.~~

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Commented [BG4]: This is the first time the term "source material" is used in the plan. The plan needs to state what the "source material" is.
In the first paragraph you say that the oily-tar-like material is "waste material". Is this what you're calling "source material"?

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~~Wetland frontages occur onsite, in the downstream segments of Sand Creek and further downgradient in Little Deep Fork Creek. There is no documentation or evidence to indicate that the tank areas had or maintained a run-on control system or runoff management system (including treatment of diked liquids), liner, or an engineered cover (ODEQ, Sept 2011). These conditions remain a concern as the presence of source material has been verified during site investigation activities along Sand Creek (Figure 5). In addition, the presence of source material has been verified on two residential properties within the immediate vicinity of the home: one being in the front yard and one being in the back yard.~~

Lead Sweetening Area

In addition to the waste material, an area located on the Wilcox Process area is contaminated with high levels of lead and phenols (**Figures 4c and 5**; **Lockheed 2016**). This area is denuded of vegetation and covered by silty sparkling sand and a white, salt-like substance (**Lockheed 2016**). Significant surface erosion from this area to the south towards Sand Creek is noted. According to the Sanborn Maps, acid tanks were located in this area as well. Throughout this document, this area will be referred to as the lead sweetening area.

According to a 1930 article published in, *The Refiner and Natural Gasoline Manufacturer*, the Wilcox Oil Company refinery used sodium plumbite (Na_2PbO_2) as an additive for gasoline to meet Doctor??? and corrosion specifications. The presence of high levels of phenols in conjunction with high levels of lead in the surface soils in this area appears to indicate that chemicals from the sweetening process are the sources for the contamination (**Lockheed 2016**).

Surface soils were tested extensively using the field portable x-ray fluorescence device (XRF). When tested with XRF, the sand and white, salt-like substance tested very high for lead content. Readings were above the calibration range, indicating percent levels of lead are present. Lead results for samples collected during site investigations are as high as 75,000 mg/kg. In general, lead appears to attenuate quickly with depth, but a more comprehensive vertical delineation is needed throughout this area.

This area is likely impacting Sand Creek due to high lead concentrations at the surface throughout this area and visible surface erosion toward Sand Creek to the south and the tributary to Sand Creek to the east (**Lockheed 2016**). Lead in sediment has been detected at levels exceeding two times the ecological screening level 17 mg/kg at concentrations of 34 mg/kg.

Temporary piezometers were installed within the lead sweetening area and associated Tank 12 area to sample the perched water. High concentrations of contaminants are present including total and dissolved lead as high as 752 micrograms per liter (µg/l), 2-methylphenol as high as $1.5x10^6$ µg/l, Phenol as high as 270,000 µg/l, 2,4 dimethylphenol as high as $1.3x10^6$ µg/l, and benzene as high as 2400 µg/l (**Lockheed 2016**).

PRINCIPAL THREAT WASTE

The waste material and lead sweetening area are considered to be principal threat wastes because they are sources containing hazardous substances, pollutants or contaminants that act as reservoirs for migration of contamination to soil, sediment, surface water, air, may act as a reservoir for migration of contamination to ground water, and are sources for direct exposure to humans and ecological receptors **(Table 1)**. If left in place, these principal threat wastes are a continual source of contamination for exposure and migration and limit the use and redevelopment of the site under future scenarios.

The EPA expects to use treatment to address the principal threats posed by a site, wherever practicable, and engineering controls for waste that poses a relatively low long-term threat or where treatment is

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impracticable. This remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). All lead sweetening area soil will require treatment prior to disposal in accordance with 40 CFR § 261.24. Although the waste material is identified as a principal threat waste, the waste material is not identified as hazardous waste based on current data. Treatment of the waste material will not be cost effective since it is not currently identified as a characteristic hazardous waste under 40 CFR § 261.24 and will not require treatment prior to disposal in an appropriately permitted and regulated offsite landfill.

Although this Early Action is not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, this action does utilize treatment and thus supports that statutory mandate (**EPA 1999**). The lead sweeting area soil source material that constitutes a principal threat waste will be treated at the permitted offsite landfill to meet disposal requirements while reducing toxicity and mobility.

SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The waste material and lead sweetening area are source materials identified as principal threat wastes. This proposed early action addresses the principal threat waste through site cleanup and offsite disposal with treatment.

Taking appropriate early actions at sites during the investigation stage of the process is consistent with the NCP and existing EPA guidance (**EPA 2017**). The NCP [40 CRF § 300.430(a)(1)] states, "Remedial actions are to be implemented as soon a site data and information make it possible to do so." This is further clarified in the preamble to the NCP (Federal Register, 1990),

> *EPA expects to take early action at sites where appropriate and to remediate sites in phases using operable units as early actions to eliminate, reduce or control the hazards posed by a site or to expedite the completion of total site cleanup. In deciding whether to initiate early actions. EPA must balance the desire to definitively characterize site risks and analyze alternative remedial approaches for addressing those threats in great detail with the desire to implement protective measures quickly.*
>
> *EPA promotes the responsiveness and efficiency of the Superfund program by encouraging action prior to or concurrent with conduct of an RI/FS as information is sufficient to support a remedy selection. These actions may be taken under removal or remedial authorities as appropriate.*

Although a final site investigation and determination of nature and extent of contamination has not been completed, principal threat wastes are identified at various locations across the site. These principal threat wastes are source materials containing high concentrations of hazardous substances, pollutants, and chemicals that act as a continual source of contamination for exposure and migration to human health and ecological receptors and environmental media.

The proposal of this early action is appropriate and consistent with NCP and existing EPA guidance. The early action will

- eliminate, reduce, or control actual or potential risks and hazards posed by the principal threat waste;
- eliminate, reduce, or control actual or potential migration of contaminants or further environmental degradation posed by the principal threat waste;
- expedite site cleanup completion;

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The first paragraph should provide a clearer discussion that this is an early action and talk about how you plan to clean up the site.

I believe the rest of the discussion about the early action being appropriate etc. should be discussed in the RAO section.

- promote prompt risk reduction and increase site response efficiency; and,
- be consistent with the final site remedy.

The source areas at the site can be defined individually with estimates on volume, depth and cost. Table 3 provides a breakdown of these areas as well as associated estimates. It is expected that not all areas will be addressed as one action, but rather these areas would be prioritized and addressed as funding is available. Source areas would be addressed in accordance with the selected early action remedial alternative, albeit on different schedules.

It is noted that not all former tank locations have been investigated and the presence or absence of waste material in these locations has not been verified. EPA will continue to investigate the nature and extent of contamination during the site-wide RI. Should additional principal threat waste being of consistent matrix and chemical nature as that addressed under this early action be identified during the ongoing investigation, the agency will consider these principal threat wastes as sources that may be addressed under the authority of this decision document and documented in an Explanation of Significant Differences.

The response action selected in this proposed Early Action is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment which may present an imminent and substantial endangerment to public health or welfare or the environment.

SITE RISKS and BASIS FOR ACTION

The proposed remedy ~~selected~~ is an early action, taken early in the remedial investigation process to prevent further human health and ecological exposures from actual or threatened releases of hazardous substances into the environment and to prevent further migration of site contaminants to on- and offsite receptors and media. By taking this early action, further environmental degradation of adjacent waterways (e.g., Sand Creek and the East Tributary) will be eliminated. In addition, significant risk reduction, human and ecological, will be accomplished through removal of primary sources at or near the soil surface located on residential properties and within stream riparian areas.

Neither a formal RI/FS report nor a human health or ecological risk assessment are available. Exposures to waste material and the lead sweetening area are not calculated. Rather, the waste material and the lead sweetening area are identified as a principal threat wastes and are sources of continual contamination and thus would be addressed during site cleanup regardless. Results for samples collected from the waste material and the lead sweetening area exceed risk-based screening numbers by orders of magnitude (Table 4).

Remedial Action Objectives

The remedial action objectives for the Waste Material and lead sweetening area are to

- Prevent exposure to human and ecological receptors through ingestion and dermal contact.
- Prevent further migration of wastes to Site and/or off-site soils, sediment, groundwater, and surface water.

All waste material and the lead sweetening area will be addressed as principal threat waste. Numeric cleanup levels are not appropriate for this early action. Because waste material is easily identified and distinguished from soil, removal will be conducted visually. Affected soil beneath the waste material will be evaluated in accordance with the remedial action objectives and remediation goals identified for

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Most likely any additional areas could be documented in an ESD without this statement, and could even fall under the final remedy decision given the timeframe for completion of the RI and funding.

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I found an old guidance document that discusses documentation of early actions. It gives more info about what to talk about in the risk section. I will send you a copy. I believe you have enough data to present there is a risk that needs to be address.

Here is the language from the old guidance document:
• Summary of Site Risks: This section should focus on risks addressed by the interim action and should provide the rationale for the limited scope of the action. The rationale can be supported by facts that indicate that temporary action is necessary to stabilize the site or portion of the site, prevent further environmental degradation, or achieve significant risk reduction quickly while a final remedial solution is being developed. Qualitative risk information may be presented if quantitative risk information is not yet available, which often will be the case. The more specific findings of the baseline risk assessment should be included in the subsequent final action ROD for the operable unit and the ultimate cleanup objectives (i.e., acceptable exposure levels) for the site or operable unit.

Also, the guidance document on Principal Threat Waste talks about PTW not necessarily be equated to site risks. The following is from the PTW guidance document:
Determinations as to whether a source material is a principal or low level threat waste should be based on the inherent toxicity as well as a consideration of the physical state of the material (e.g.,liquid), the potential mobility of the wastes in the particular environmental setting, and the lability and degradation products of the material. However, this concept of principal and low·
level threat Waste should not 'necessarily be equated with the risks posed by site contaminants via various exposure pathways. Although the characterization of some material as principal or low level threats takes into account toxicity (and is thus related to degree of risk posed assuming exposure occurs),characterizing a waste as a principal threat does not mean that the Waste poses
the primary risk at the site.

The identification of principal and low level threats is made on a site-Specific basis. In some situations Site wastes will not be readily classifiable as either a principal or low level threat waste, and thus no general expectations on how best to manage these source materials of moderate toxicity ... [1]

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surface soil established as part of the final selected remedy. This early action will neither be inconsistent with, nor preclude, implementation of a final site remedy.

DESCRIPTION OF ALTERNATIVES

Because this is an early-interim remedial response action, a feasibility study (FS) was not performed. The preamble to the NCP states that "…where the relevant data can be summarized briefly and the alternatives are few and straightforward, it may be adequate and more appropriate to document this supporting information in the proposed plan…" (Federal Register, 1990).

Immobilization is considered by EPA to be a highly effective way to clean up metals in soils in many cases. Immobilization has been identified as a presumptive remedy by EPA for metals in soil because it repeatedly has been shown to be effective at treating similar wastes at other CERCLA sites. Presumptive remedies were developed by EPA to streamline the selection of cleanup methods for certain categories of sites by narrowing the consideration of cleanup methods to treatment technologies or remediation approaches that have a proven track record in the Superfund program. EPA has determined that it is appropriate to apply the presumptive remedy for metals in soil at this site based on the soil and contaminant characteristics found at the site and guidance provided in the directive. Because the relevant data can be summarized briefly and the alternatives are few and straightforward, this early action proposed plan documents the alternative screening process in **Table 5.**

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Common Elements of all Alternatives except for Alternative 1 - No Action

- The waste material and the lead sweetening area will be addressed as principal threat waste. Because waste material is easily identified and distinguished from soil, removal will be conducted visually. Affected soil beneath the waste material will be evaluated in accordance with the RAOs and cleanup levels identified for surface soil established as part of the final selected remedy.
- For cost and alternative evaluation purposes, Operation and Maintenance (O&M) activities are estimated for a 30-year period. The 30-year time frame is chosen as a comparison timeframe only. In addition, a discount factor of 7% is used to calculate present worth costs.
- Currently, no listed hazardous waste has been identified. Based on current Toxicity Characteristic Leaching Procedure (TCLP) data, the waste material is expected to be non-hazardous while the lead sweetening area is expected to be characteristic hazardous waste. All cost estimates are based on these assumptions.

Alternative 1: No Action
Estimated Capital Cost: $0
Estimated Annual O&M Cost: $0
Estimated Present Worth cost: $0
Estimated Construction Timeframe: None

Regulations governing the Superfund program generally require that the "no action" alternative be evaluated to establish a baseline for comparison. Under this alternative, the ODEQ and EPA would take no action at the Site to prevent exposure to or possible migration of contamination. Contaminants and hazardous substances will continue to be or threaten to be released into the environment. Neither RAOs nor ARARs will be met.

All remedial alternatives, except the "no action" alternative are expected to attain the RAOs and meet appropriate applicable or relevant and appropriate requirements (ARARs).

Alternative 2: Excavation and Offsite Disposal with Treatment

Estimated Capital Cost: $5,234,322
Estimated Annual O&M Cost: $0
Estimated Present Worth cost: $5,234,322
Estimated Construction Timeframe: 3 months
Estimated Time to Achieve RAOs: 3 months

Approximately **31720** cubic yards (y^3) of waste material, visibly identified at the site, would be excavated and transported to an offsite permitted **non-hazardous disposal facility**. The waste materials are classified as non-hazardous waste based on TCLP results. Although not identified as hazardous waste, the waste materials are considered PTW because they are a source of contaminants and are highly toxic.

For this alternative, approximately **6533** y^3 of lead sweetening soil, visibly identified at the site, would be excavated and transported to an offsite permitted **hazardous disposal facility for treatment and disposal**. The waste materials are classified as characteristic hazardous waste based on TCLP results. In addition to identification as a characteristic hazardous waste, the waste materials are considered PTW because they are a source of contaminants and are highly toxic.

Site preparation activities will include mobilization to the site of personnel, equipment, and subcontractors. Areas requiring excavation will be flagged and cleared of surface vegetation. Excavation of waste material and lead sweetening area soil will continue vertically and horizontally based on visual observations. During excavation activities, dust control measures, such as water spray, will be used to mitigate fugitive dust. Air monitoring equipment will be used to establish a safety perimeter based on the presence of potential vapors to ensure the health and safety of onsite workers, the surrounding community, and the environment. Onsite workers directly involved in the excavation of waste material may be required to use respirators. After removal of materials, the excavated area will be documented and sampled to determine area, depth, cubic yards removed, and concentrations of soil at base and sides of excavation. All excavation areas will be backfilled with clean soil, graded for drainage and erosion control, and re-vegetated.

Excavated material will be transported to the appropriate offsite permitted disposal facility by truck. All trucks will be decontaminated prior to leaving the site, will be tarped to contain materials within the bed of the truck, and will only transport material via the pre-approved transportation route.

Excavation and removal will achieve RAOs by preventing exposure and migration due to the removal and offsite disposal of waste material and removal and offsite treatment and disposal of the lead sweetening area soil. Once material is removed, these areas will be subject to the final soil alternative RAOs and remediation goals developed under the final decision document for the site. Treatment of the lead sweetening area soil prior to disposal meets the EPA's preference for treatment of PTW. This alternative will be compliant with disposal standards considered under 40 CFR 268, **40 CFR Part 263, and under 264 subpart E for hazardous wastes**, and does not require implementation of long-term O&M and monitoring, establishment and enforcement of institutional and engineering controls, or the completion of five-year reviews. This alternative will be compatible with the expected future use of residential.

Alternative 3: Excavation, Treatment, Consolidation, and Capping
Estimated Capital Cost: $4,770,081
Estimated Annual O&M Cost: $677,489
Estimated Present Worth cost: $5,447,570
Estimated Construction Timeframe: 6 months
Estimated Time to Achieve RAOs: 6 months

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Or can subtitle D accept if they can treat it?

This alternative involves the excavation of approximately 38,254 y^3 of waste material and lead sweetening area soil.

Site preparation activities will include mobilization to the site of personnel, equipment, and subcontractors. Areas requiring excavation will be flagged and cleared of surface vegetation. Excavation of waste materials and lead sweetening area soil will continue vertically and horizontally based on visual observations. During excavation activities, dust control measures, such as water spray, will be used to mitigate fugitive dust. Air monitoring equipment will be used to establish a safety perimeter based on the presence of potential vapors to ensure the health and safety of onsite workers, the surrounding community, and the environment. Onsite workers directly involved in the excavation of waste material may be required to use respirators. After removal of materials, the excavated area will be documented and sampled to determine area, depth, cubic yards removed, and concentrations of soil at base and sides of excavation. All excavation areas will be backfilled with clean soil, graded for drainage and erosion control, and re-vegetated.

Approximately 6533 y^3 of lead sweetening area soil will be treated onsite through physical/chemical immobilization, and will require a treatability study prior to full-scale remediation to identify appropriate additives and reagents for treatment. All excavated and immobilized soil will be consolidated into an onsite landfill and capped with a geomembrane and vegetative cover. The most appropriate location for the consolidated materials will be determined during the design. Consolidation will minimize the extent of the capped area allowing for greater reuse of the Site.

Signs will be posted at the property boundary to provide notification of the presence of contamination and to warn against intrusive activities. A fence will be installed around the onsite landfill to separate it from the highway, railroad, and adjacent properties. Institutional Controls (ICs) will be required to aid in the management of the contamination capped onsite. ICs will include a deed notice to notify current and potential future deed holders of the presence of contaminants and of the capped area to prevent intrusive activities (i.e., digging) at the property and to ensure protectiveness of the remedy. The deed notices will identify the reason for the notice, the affected property, the remedy, engineering controls, and land use restrictions. The ODEQ will request that the landowner grant an easement for continued remedial response. The deed notice and easement will be filed by the ODEQ. Site inspections will occur on an annual basis to verify that the fencing, soil cap and warning signs remain in place and to replace them, as necessary. ICs will be reviewed and monitored to verify that they remain in place, continue to be effective, are protective, and are enforced. In addition, Five-year reviews will be required to monitor the effectiveness of the remedy.

This alternative will achieve all RAOs by preventing exposure through engineering controls, institutional controls, and monitoring for offsite migration. Because the contaminants will be left in place and capped, this remedy will be compliant with the Oklahoma Solid Waste Management Act, 27A O.S. § 2-10-101 *et seq.* and ODEQ's Solid Waste Management rules, OAC 252:515. Disposal of characteristically hazardous soil, as defined under 40 CFR § 261.24, will be compliant with closure and post-closure standards under 40 CFR Part 264 subpart G. Because of consolidation, more of the Site will be available for reuse.

COMPARISON OF ALTERNATIVES

The EPA uses nine NCP criteria to evaluate alternatives for cleanup. These nine criteria are categorized into three groups: threshold, balancing, and modifying. The threshold criteria must be met in order for an alternative to be eligible for selection. The threshold criteria are overall protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). The balancing criteria are used to weigh major tradeoffs among alternatives. The five balancing criteria are

long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost. The modifying criteria are state acceptance and community acceptance. The following briefly describes the evaluation criteria.

In the following analysis and **Table 6,** the alternatives are evaluated in relation to each other with regard to the nine criteria noting the relative advantages and disadvantages of each alternative.

1. Overall Protection of Human Health and the Environment

All of the alternatives except the "no action" alternative would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment, containment, engineering controls, and/or institutional controls. Because the "no action" alternative is not protective of human health and the environment, it is eliminated from consideration under the remaining eight criteria.

2. Compliance with ARARS

All of the alternatives would meet their respective Applicable or Relevant and Appropriate Requirements (ARARs) from Federal and State laws. All alternatives would comply with the Endangered Species Act and the Executive Order on Floodplain Management. All alternatives would need to meet substantive requirements of the National Emission Standards for Hazardous Air Pollutants and the Oklahoma Air Pollution Control Act relevant to particulate matter and air pollutants. Alternatives that require transportation of contamination and wastes to an off-site disposal facility will have to be conducted pursuant to Federal and State transportation and disposal regulations. Facilities accepting these wastes would have to be certified to accept the respective wastes. Land disposal restrictions (LDRs) would not apply to offsite disposal of non-hazardous wastes; however, LDRs do apply to offsite disposal of characteristic hazardous wastes. In addition, onsite containment or treatment will meet LDRs or minimum technology requirements.

3. Long-term Effectiveness and Permanence

Alternative 2 (Excavation and Offsite Disposal with Treatment) will be most effective and permanent in the long-term as the potential for exposure or offsite migration is completely eliminated through removal of contamination from the Site. This remedy does not require implementation of long-term O&M and monitoring, establishment and enforcement of institutional and engineering controls, or the completion of five-year reviews. This alternative will be compatible with the expected future use of residential, and will not require any restrictions.

Alternative 3 (Excavation, Treatment, Consolidation, and Capping) will be effective and permanent in the long-term as long as O&M is performed and institutional and engineering controls are enforced. This remedy will be less effective in the long-term than Alternative 2 (Excavation and Offsite Disposal with Treatment) because treated and untreated contaminated media will be left onsite. This remedy will eliminate the potential for exposure and migration through consolidation, treatment, and construction of a barrier, provided long-term monitoring, O&M, and enforcement of institutional and engineering controls to assure protectiveness are performed.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

Both Alternatives will meet this criterion by reducing toxicity and mobility through treatment of the lead sweetening soil using immobilization. During immobilization, the lead sweetening area soil volume most likely will increase due to the addition of the treatment additives and reagents.

Alternative 2 (Excavation and Offsite Disposal with Treatment) removes waste material from the Site; therefore, only mobility is reduced, although not through treatment. Alternative 3 (Excavation, Treatment, Consolidation, and Capping) removes waste material from multiple site locations and consolidates it at

one location. Only mobility is reduced, although not through treatment, in areas where waste material is removed, and is managed through engineering controls where waste is capped onsite.

5. Short-term Effectiveness

All of the alternatives are effective in the short-term but vary in the degree of time to reach RAOs and control potential short-term exposure. Alternative 2 (Excavation and Offsite Disposal with Treatment) will meet RAOs in approximately 3 months while Alternative 3 (Excavation, Treatment, Consolidation, and Capping) will meet RAOs in approximately 6 months. [Note: these time frames assume that all areas are addressed during one action.]

Potential risks to the onsite workers and community through excavation and removal of source material and potential dust emissions will be encountered with all of the alternatives. Alternative 2 (Excavation and Offsite Disposal with Treatment) will pose the least amount of potential risk to onsite workers and community because contaminated source material is removed from the site in a short amount of time, without the use of treatment reagents, and with reduced contamination handling. However, there is additional potential risk due to offsite hauling and disposal. This alternative will be compatible with the expected future use as residential, and will not require any restriction.

Alternative 3 (Excavation, Treatment, Consolidation, and Capping) has an increased potential risk to onsite workers and the community as compared to Alternative 2 (Excavation and Offsite Disposal with Treatment) through exposure to treatment reagents, operation of specialized equipment, and potential dust emissions. In addition, Alternative 3 presents a higher potential risk to onsite workers, the community, and the environment because of a onsite treatment and consolidation activities, an extended time period to reach RAOs, contamination being left onsite, and the complexity of enforcing institutional and engineering controls. This option restricts and limits property reuse and is not currently compatible with the expected future use of residential.

6. Implementability

Alternative 2 (Excavation and Offsite Disposal with Treatment) is a common easily implemented practice where equipment and services are readily and commercially available. This remedy does not involve additional material handling and treatment, specialized personnel training related to treatment implementation, and is a common construction practice of which most companies are experienced. This remedy does not require specialized equipment or treatment mixtures, and is a straight-forward implementation process. This remedy does not require implementation of long-term O&M and monitoring, establishment and enforcement of institutional and engineering controls, or the completion of five-year reviews. This alternative will be compatible with the expected future use of residential. Implementation of this alternative is no contingent on the entire estimated alternative cost as each area can be addressed independently.

Alternative 3 (Excavation, Treatment, Consolidation, and Capping) is a common cleanup method that requires some expertise in the construction of an onsite landfill and geomembrane/soil cap. This remedy will include additional materials handling and specialized equipment and treatment mixtures to properly treat the lead sweetening soil prior to disposal. Onsite mixtures will have to be managed onsite and staged for curing. Confirmation samples of each treatment batch will be taken to prove immobilization treatment criteria are met. This remedy requires coordination with the property owner to identify an appropriate location for the landfill. It also requires coordination with on ongoing investigation activities since the site-wide investigation has not been completed. In addition, there are uncertainties associated with the location of the landfill, the quantity of source material needing to be consolidated, the potential for identification of additional source material that may need to managed under this remedy, and the risk of having to close and reopen the landfill to accommodate the final cleanup option. This remedy will require

implementation of long-term O&M and monitoring, establishment and enforcement of institutional and engineering controls, and completion of five-year reviews. This option restricts and limits property reuse and is not currently compatible with the expected future use as residential. Implementation of this alternative is contingent on receiving the entire estimated alternative cost as all areas will need to excavated within the same time frame as the construction of the onsite landfill.

7. Cost

The estimated cost for implementation of Alternative 2 (Excavation and Offsite Disposal with Treatment) is $5,234,322. The estimated cost for implementation of Alternative 3 (Excavation, Treatment, Consolidation, and Capping) is $5,447,570.

8. State/Support Agency Acceptance

The State of Oklahoma and EPA support the Preferred Alternatives.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the responsiveness summary in the Site Early Action ROD.

SUMMARY OF THE PREFERRED REMEDIAL ALTERNATIVE

The Preferred Alternative for the Early Action at the Wilcox Oil Company Superfund Site is Excavation and Offsite Disposal with Treatment. Waste material and lead sweetening area soil will be excavated and transported to an offsite permitted disposal facility. The permitted facility will handle and treat the lead sweetening area soil to meet disposal requirements.

By preventing exposure and contaminant migration through removal and offsite disposal, this alternative meets the RAOs, reduces mobility and toxicity through treatment, and is permanent and effective in the long-term. Implementation requires standard construction equipment, utilizes commercially and readily available services, satisfies the RAOs in the least amount of time, and does not require specialized equipment or treatments. The final action would not require long-term monitoring, site inspections, O&M, ICs, **or five-year reviews** due to the removal of contamination from the site. The Alternative is compatible with current residential land use, and the expected future residential land use.

Based on the information currently available, the State of Oklahoma and EPA believe the Preferred Alternatives would meet the threshold criteria and provide the best balance of tradeoffs among other alternatives with respect to the balancing and modifying criteria. The Agencies expect the Preferred Alternatives to satisfy the following statutory requirements of CERCLA Section 121(b): be protective of human health and the environment, comply with ARARs, be cost effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Since source materials constituting principal threat waste would be disposed offsite with treatment, the remedy will meet the statutory preference for the selection of a remedy that involves treatment as a principal element. The Preferred Alternative can change in response to public comment or new information.

This Early Action is protective of human health and the environment in the long-term and is intended to provide significant risk reduction until a final ROD is signed. This actions complies with those federal and state requirements that are applicable or relevant and appropriate for this limited-scope action, and is cost-effective. Although this Early Action is not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, this action does utilize treatment and thus supports that statutory mandate. Because this action does not constitute the final remedy for the site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a

principal element, although partially addressed in this remedy, will be addressed by the final response action. Because this is an early action, review of this site and remedy will be ongoing as EPA continues to develop final remedial alternatives for the site.

COMMUNITY PARTICIPATION

The ODEQ and EPA provide information regarding the cleanup of the Wilcox Oil Company Site to the public through site meetings, the Administrative Record file for the site, EPA and ODEQ Site-specific web pages, and fact sheets. The ODEQ and EPA encourage the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted at the Site.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

Page 7: [1] Commented [BG13] **Baumgarten, Gary** **6/1/2017 7:28:00 AM**

I believe you need a better discussion of site risks to justify the basis for taking the action. You talk about "significant risk" but the document does not really describe how you arrived at that conclusion.

I found an old guidance document that discusses documentation of early actions. It gives more info about what to talk about in the risk section. I will send you a copy. I believe you have enough data to present there is a risk that needs to be address.

Here is the language from the old guidance document:
• Summary of Site Risks: This section should focus on risks addressed by the interim action and should provide the rationale for the limited scope of the action. The rationale can be supported by facts that indicate that temporary action is necessary to stabilize the site or portion of the site, prevent further environmental degradation, or achieve significant risk reduction quickly while a final remedial solution is being developed. Qualitative risk information may be presented if quantitative risk information is not yet available, which often will be the case. The more specific findings of the baseline risk assessment should be included in the subsequent final action ROD for the operable unit and the ultimate cleanup objectives (i.e., acceptable exposure levels) for the site or operable unit.

Also, the guidance document on Principal Threat Waste talks about PTW not necessarily be equated to site risks. The following is from the PTW guidance document:
Determinations as to whether a source material is a principal or low level threat waste should be based on the inherent toxicity as well as a consideration of the physical state of the material (e.g.,liquid), the potential mobility of the wastes in the particular environmental setting, and the lability and degradation products of the material. However, this concept of principal and low·
level threat Waste should not 'necessarily be equated with the risks posed by site contaminants via various exposure pathways. Although the characterization of some material as principal or low level threats takes into account toxicity (and is thus related to degree of risk posed assuming exposure occurs),characterizing a waste as a principal threat does not mean that the Waste poses
the primary risk at the site.

The identification of principal and low level threats is made on a site-Specific basis. In some situations Site wastes will not be readily classifiable as either a principal or low level threat waste, and thus no general expectations on how best to manage these source materials of moderate toxicity and mobility will necessarily apply. [NOTE: In these situations wastes do not have to be characterized as either one or the other. The principal threat/low level threat waste concept and the NCP expectations were established to help streamline and focus the remedy
election process, not as a mandatory waste classification requirement]